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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Walid S. Ibrahim Ali

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07/28/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
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EXAMINER

EDWARDS, PATRICK L

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/817,981

Applicant(s)

ALI ET AL.

Examiner

Patrick L Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 07 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

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### DETAILED ACTION

1. The response received on May 7, 2004 has been placed in the file and was considered by the examiner. An action on the merits follows.

#### *Response to Arguments*

2. The applicant's arguments, filed on May 7, 2004, have been fully considered. A response to these arguments is provided below.

#### Prior Art Rejections

*Applicant's Argument:* Claims 1, 6 and 18-19 stand rejected under 35 USC 102(a) as being anticipated by Frisch. With respect to this rejection, the applicant argues that the "genes" disclosed in Frisch are not analogous to the "video processing algorithms" recited in the claim (applicant's remarks pg. 2, 3<sup>rd</sup> paragraph). More specifically, the applicant argues that the "genes" of Frisch cannot reasonably be interpreted as "a chain of video processing algorithms for processing a video stream" because Frisch states (on page 2 lines 15-17) that each gene defines an attribute of the associated image such as brightness, color saturation and contrast (applicant's remarks pg. 2, paragraph 4).

*Examiners Response:* The applicant's arguments have been fully considered but are not persuasive. The applicant states that a cited passage (page 2 lines 15-17) of the Frisch disclosure eliminates the possibility that the 'genes' from the Frisch reference could be interpreted as video processing algorithms. The examiner disagrees with this argument and respectfully invites the applicant to read the next three lines of the Frisch disclosure, which state that the "genes" of Frisch are indeed analogous to the video processing algorithms recited in the claim. A quotation of these lines (pg. 2 lines 19-21 of Frisch) is provided in italics below.

*The genotype may also contain genes that define methods for enhancing the digital image. For example, the gene may define a method for making a global color shift in the digital image or applying special effects to the digital image.*

It follows that a 'method for enhancing a digital image' as disclosed in Frisch is analogous to the claimed 'video processing algorithm' and could quite possibly be used as a definition for the claimed term.

*Applicant's Argument:* The applicant additionally argues that the Frisch reference fails to disclose "an optimization unit comprising an algorithm capable of optimizing said at least one control parameter setting of said at least one video processing algorithm" as recited in claim 1, "a genetic algorithm unit comprising a genetic algorithm capable of optimizing said at least one control parameter setting of said at least one video processing algorithm" as recited in claim 6, and "using an algorithm in an optimization unit to optimize said at least one control parameter setting of said at least one video processing algorithm" as recited in claim 18. More specifically, the applicant

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argues that the passage from the Frisch reference which was cited in the non-final rejection (Frisch pg. 13, line 16 – pg. 14 line 7) shows that Frisch only discloses taking a weighted average of the leader and child gene parameter, and consequently does not disclose the recited claim limitations.

*Examiner's Response:* The applicant's arguments have been fully considered but are not persuasive. The applicant has recited limitations from 3 different independent claims. The claimed "genetic algorithm unit" performs optimization of control parameters, and therefore qualifies as the claimed "optimization unit". It follows that the claim 6 recitation is the most limiting of the three and will be treated as a representative claim.

With regard to this claim 6 limitation, the above argument with respect to a "gene" from Frisch and the claimed "video processing algorithm" is incorporated herein. Frisch further discloses optimizing a gene parameter (i.e. taking a weighted average of the leader and child gene parameter to determine a 'next generation gene parameter'). Since a "gene" as disclosed in Frisch is analogous to the claimed "video processing algorithm" (as was discussed above), a parameter of said gene is consequently analogous to a control parameter setting of a video processing algorithm recited in the claim. It follows that an optimization of this gene parameter as disclosed in Frisch is analogous to the optimization of a control parameter setting of a video processing algorithm recited in the claim. Therefore, we can conclude that the Frisch disclosure teaches all of the limitations of the claimed "genetic algorithm unit".

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 6, 18 and 19 are rejected under 35 U.S.C. 102(a) as being anticipated by Frisch (WO 00/33207).

With regard to claim 6, which is representative of claims 1, 18 and 19, Frisch discloses that a gene is a method for enhancing a digital image (i.e. a video processing algorithm) (Frisch pg. 2 lines 19-21). Frisch further discloses that this gene (i.e. video processing algorithm) comprises control parameters which are optimized using a genetic algorithm (Frisch pg. 13 line 28 – pg. 14 line 7). The determination of a next generation gene parameter as disclosed in Frisch is analogous to the claimed "optimization" of a control parameter. Consequently, we can conclude that all of the limitations of the claimed "genetic algorithm unit" are disclosed in the Frisch reference.

With regard to the further limitation of a "chain of video processing algorithms", Frisch discloses applying a set of several genes (i.e. algorithms) to a digital image (i.e. a video image) in a predetermined order (Frisch pg. 15 lines 22-29 in conjunction with Figures 12A-21). Consequently, the limitation of a "chain of video processing algorithms" is disclosed in the Frisch reference.

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-5, 7-11, 13-17 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frisch as applied to claims 1, 6 and 18-19 above, and further in view of Watanabe et al. (USPN 6,004,015). The arguments as to the relevance of Frisch as applied above are incorporated herein.

With regard to claim 7, which is representative of claim 2, Frisch discloses a fitness value that characterizes the video quality of an output video stream (Frisch element 618 of Figure 6). Frisch further discloses providing the fitness value to the genetic algorithm in the genetic algorithm unit (Frisch element 622 of Figure 6). Frisch discloses “receiving” these video output quality based fitness ratings, but does not expressly disclose a unit for “determining” the fitness values.

Watanabe, however, discloses a unit for determining fitness values (Watanabe col. 22 lines 31-38 in conjunction with element 105 of Figure 1). The fitness calculating section disclosed in Watanabe is analogous to the objective quality metric unit as recited in the claim. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Frisch’s video processing system, which receives the fitness value directly from the user, by dedicating a unit for determining the fitness value as taught by Watanabe. Such a modification would have allowed for a system that automated the determination of fitness values and thereby reduced the user’s burden (Watanabe col. 5 lines 41-50).

With regard to claim 8, which is representative of claims 3 and 20, Frisch further discloses using a fitness value to optimize a control parameter setting (Frisch, elements 622 and 624 of Figure 6).

With regard to claim 9, which is representative of claims 4 and 21, Frisch further discloses a genetic algorithm capable of optimizing a plurality of control parameter settings in a chain of video processing algorithms (Frisch, Figure 6). Figure 6 of Frisch shows the optimization of a genotype. A genotype as disclosed in Frisch comprises a plurality of genes, which comprise a plurality of parameters. The genes as disclosed in Frisch are analogous to video processing algorithms as recited in the claim. It follows that a genotype as disclosed in Frisch is analogous to a chain of video processing algorithms as recited in the claim. As a result, optimizing a genotype as disclosed in Frisch is analogous to optimizing a plurality of control parameter settings of each of a plurality of video processing algorithms in a chain of video processing algorithms as recited in the claim.

With regard to claim 10, which is representative of claim 5, the further limitations of the claim have been addressed in the above arguments with respect to claims 2 and 7.

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With regard to claim 11, which is representative of claim 22, the further limitations of the claim have been addressed in the above arguments with respect to claims 3, 8 and 20.

With regard to claim 13, which is representative of claim 24, Frisch further discloses a peaking parameter (Frisch Figure 17). The contrast parameter disclosed in Frisch is analogous to the peaking parameter as recited in the claim.

With regard to claim 15, Frisch further discloses that candidate solutions that will not provide an improvement in video quality are excluded (Frisch, Figure 6). The images which do not have the highest fitness rating are excluded. These images are analogous to the candidate solutions that will not provide an improvement in video quality.

With regard to claim 16, Frisch further discloses that a limited number of representative candidate solutions likely to provide an improvement in video quality are considered (Frisch, Figure 6). Only the candidate solutions with the highest fitness ratings are considered.

With regard to claim 17, Frisch further discloses deriving candidate solutions from previously existing desirable candidate solutions (Frisch, element 622 of Figure 6).

With regard to claim 14, all of the limitations of the claim have been addressed in the above arguments with respect to claim 11.

7. Claims 12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Frisch and Watanabe as applied to claims 11 and 22 above, and further in view of Sims ("Artificial Evolution for Computer Graphics"). The arguments as to the relevance of the combination of Frisch and Watanabe as applied above are incorporated herein.

With regard to claim 12, which is representative of claim 23, the combination of Frisch and Watanabe fails to expressly disclose the order of the application of the algorithms as a control parameter setting. Sims, however, discloses that the order of the applications changes during mutations (Sims page 9 section 4.2). These different mutations (with differently ordered algorithms) are then evaluated for fitness. As a result, the order of the functions as disclosed in Sims is analogous to a control parameter setting as recited in the claim.

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Frisch and Watanabe's video processing system to include the order of the application of the video processing algorithms as a control parameter setting as taught by Sims. Such a modification would have allowed for a system with improved quality of output video stream by utilizing an additional parameter.

### *Conclusion*

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (703) 305-6301. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Lynn Edwards

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